

REMARKS

This communication is a full and timely response to the Office Action dated November 2, 2009. Claims 1, 2, 5-11, and 13-24 remain pending. By this communication, claims 13 and 21 are amended. Support for the amended subject matter can be found, for example, at page 26, line 27 through page 27, line 23.

Allowed Claims

Applicants again acknowledge with appreciation the Examiner's indication that claims 1, 2, 5-11, 14-20, and 22-24 are allowable.

Rejections Under 35 U.S.C. §102

Beginning on page 2 of the Office Action, claim 13 is rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Kimura et al (U.S. Patent No. 5,739,650). Applicants respectfully traverse this rejection.

As provided in Applicants' disclosure, the degradation in performance of a compressor increases when the compressor is demagnetized. To detect demagnetization an exemplary method includes the detection of the counter-electromotive voltage constant of the motor. The detected counter-electromotive voltage constant is evaluated for any variation from the specified counter-electromotive voltage constant of the motor to determine an efficiency of the motor. A reduction in the efficiency of the motor is then reported by indicating that the motor should be replaced.

Independent claim 13 broadly encompasses the foregoing features by reciting, among other features, an operating specifications evaluation step in which a driving device for identifying a motor constant of a permanent magnet motor is

provided to a user of a compressor having said permanent magnet motor installed therein, and said driving device drives said permanent magnet motor installed in said compressor to extract a first counter-electromotive voltage constant and a second counter-electromotive voltage constant of said permanent magnet motor, an efficiency monitoring step in which the efficiency of a product is monitored based on a variation between said first counter-electromotive voltage constant of said permanent magnet motor obtained in said operating specifications evaluation step and said second counter-electromotive voltage constant of said permanent magnet motor obtained in said operating specifications evaluation step.

Kimura fails to anticipate claim 13 as alleged. As discussed in a previous response, *Kimura* discloses a brushless DC motor system in which a control circuit receives a position detection signal output from a position sensor to calculate a phase of a counter-electromotive voltage and a cycle of the position detection signal to calculate a rotation speed of the motor in response to the cycle. See Kimura, col. 15, lines 26-56. The control circuit associates a phase of an inverter output voltage to the phase of the motor counter-electromotive voltage so that the motor can operate at peak efficiency relative to the current operating conditions. Id., col. 16, lines 4-25.

Kimura, however, fails to disclose or suggest the features recited in claim 13. Independent claim 13 recites, in part, driving a permanent magnet to extract a counter-electromotive voltage constant of said permanent magnet motor. In contrast, *Kimura* teaches that the phase of a counter-electromotive voltage of a motor is calculated based on a detection of a rotor position of the motor. See Kimura, col. 15, lines 32-37. Thus, one of ordinary skill would understand first that

the phase of the counter-electromotive voltage is not analogous to the phase and second, this phase value is calculated rather than detected as recited in the claims.

Applicants' claim 13 further recites that an efficiency of is monitored based on a variation in the first counter-electromotive voltage of the permanent magnet motor from a second counter-electromotive voltage of the permanent magnet motor. In contrast, *Kimura* describes the correlation between the "neutral-point voltage of the armature coils and the motor efficiency." This correlation, however, does not include a step wherein the efficiency of a product is monitored based on a **variation between first and second counter-electromotive voltages** (i.e., counter-electromotive voltage constant) of the permanent magnet motor, as recited in the claims.

Because *Kimura* does not disclose every element recited in independent claim 13, Applicants believe that this claim is not anticipated. Withdrawal of this rejection, therefore, is respectfully requested.

Rejections Under 35 U.S.C. §103

Beginning on page 3 of the Office Action, claims 14 and 21 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over *Kimura*. Applicants respectfully traverse this rejection.

Independent claim 21 also broadly encompasses exemplary embodiments recited in the disclosure, by reciting the following:

A freezing/air conditioning device comprising:
a permanent magnet motor operated at variable speed by
an inverter having an automatic tuning function or a program of
the inverter, the inverter being able to iteratively detect a
counter-electromotive voltage constant of said motor;

a compressor driven by said permanent magnet motor, for discharging a refrigerant circulating through a refrigeration cycle; and

a monitor device for monitoring performance such as a reduction in efficiency by determining a variation between a first counter-electromotive voltage constant and a second counter-electromotive voltage constant detected during operation, wherein reduction in the efficiency is reported by an alarm.

As discussed above, *Kimura* fails to disclose or suggest the detection of a counter electromotive voltage of a motor or determining a variation between a first counter-electromotive voltage and a second counter-electromotive voltage detected during operation. In contrast, *Kimura* discloses that the phase of a counter-electromotive voltage is calculated based on a detected position of a rotor of a DC motor. Moreover, this reference discloses that the efficiency of the motor is determined by setting the phase of the output voltage of the inverter relative to the phase of the counter-electromotive voltage under the corresponding load condition. See Kimura, col. 16, lines 12-25.

Based on the above, Applicants have established that *Kimura* when applied individually or in combination with any knowledge in the art as alleged, fails to disclose or suggest every feature and/or the combination of features recited Applicants' claims. For at least this reason, a *prima facie* case of obviousness has not been established and withdrawal of this rejection is requested

Regarding claim 14, Applicant believes that this claim is allowable for at least the same reasons discussed above concerning claim 13. Furthermore, claim 14 is distinguishable over *Kimura* because of the additional features recited therein. Therefore, withdrawal of this rejection is respectfully requested.

Conclusion

Based on the foregoing amendments and remarks, claims 1, 2, 5-11, and 13-24 are deemed allowable and this application is in condition for allowance. In the event, any issues adverse to the allowance of this application remain the PTO is encouraged to contact the undersigned in an effort to advance prosecution.

Respectfully submitted,

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